FIG.1

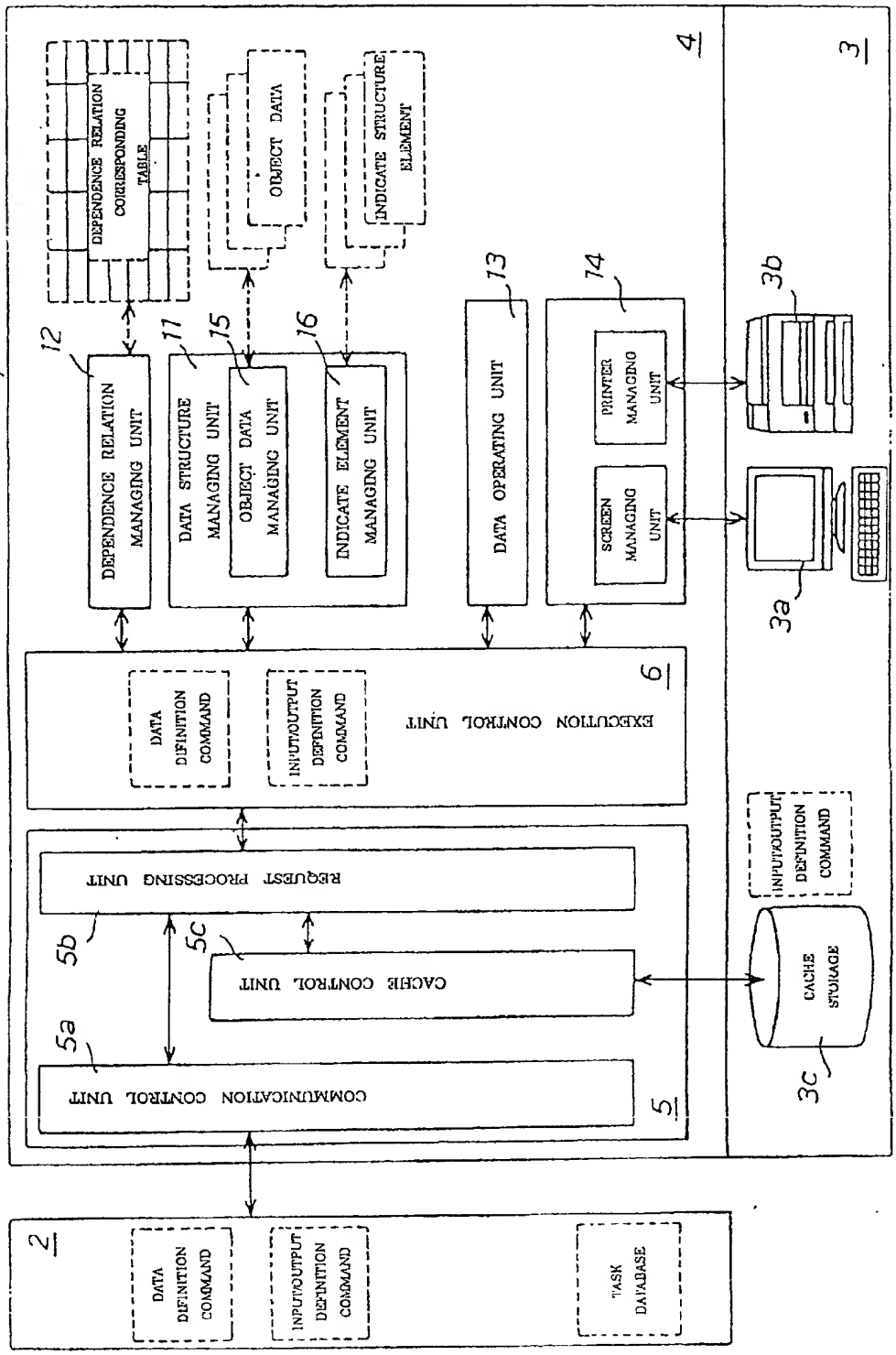
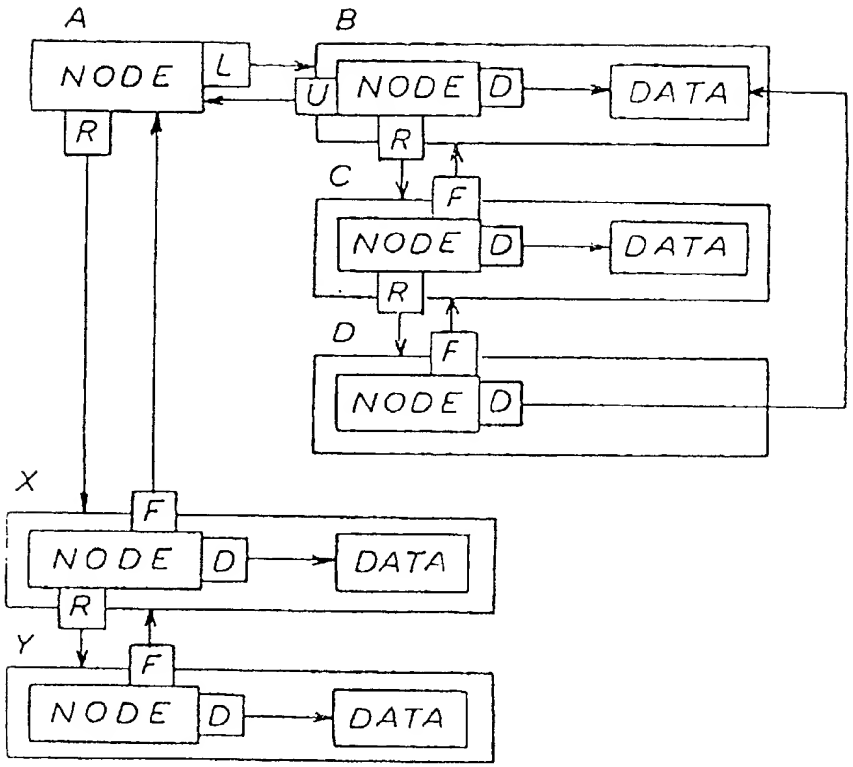

1
2
3
4
5
6
DEPENDENCE RELATION CORRESPONDING TABLE
OBJECT DATA
INDICATE STRUCTURE ELEMENT
DEPENDENCE RELATION MANAGING UNIT
DATA STRUCTURE MANAGING UNIT
OBJECT DATA MANAGING UNIT
INDICATE ELEMENT MANAGING UNIT
DATA OPERATING UNIT
PRINTER MANAGING UNIT
SCREEN MANAGING UNIT
DATA DIFINITION COMMAND
INPUT/OUTPUT DEFINITION COMMAND
EXECUTION CONTROL UNIT
REQUEST PROCESSING UNIT
CACHE CONTROL UNIT
COMMUNICATION CONTROL UNIT
CACHE STORAGE
TASK DATABASE
3a
3b
3c
5a
5b
5c
11
12
13
14
15
16

FIG.2


A
NODE
L
R
B
U
NODE
D
DATA
R
C
F
NODE
D
DATA
R
D
F
NODE
D
X
F
NODE
D
DATA
R
Y
F
NODE
D
DATA

$X = B + C$

$Y = D + C$

FIG.3

(a)

DEPENDENCE RELATION CORRESPONDENCE TABLE		
DEPENDING SOURCE	DEPENDING TARGET(1)	DEPENDING TARGET(2)
OBJECT A	OBJECT B	OBJECT C
OBJECT B	OBJECT C	
OBJECT C	OBJECT D	

(b)

DEPENDENCE LIST (D)
OBJECT C
OBJECT A
OBJECT B
OBJECT A

(c)

SOURCE LIST
OBJECT C
OBJECT B
OBJECT A

FIG.4

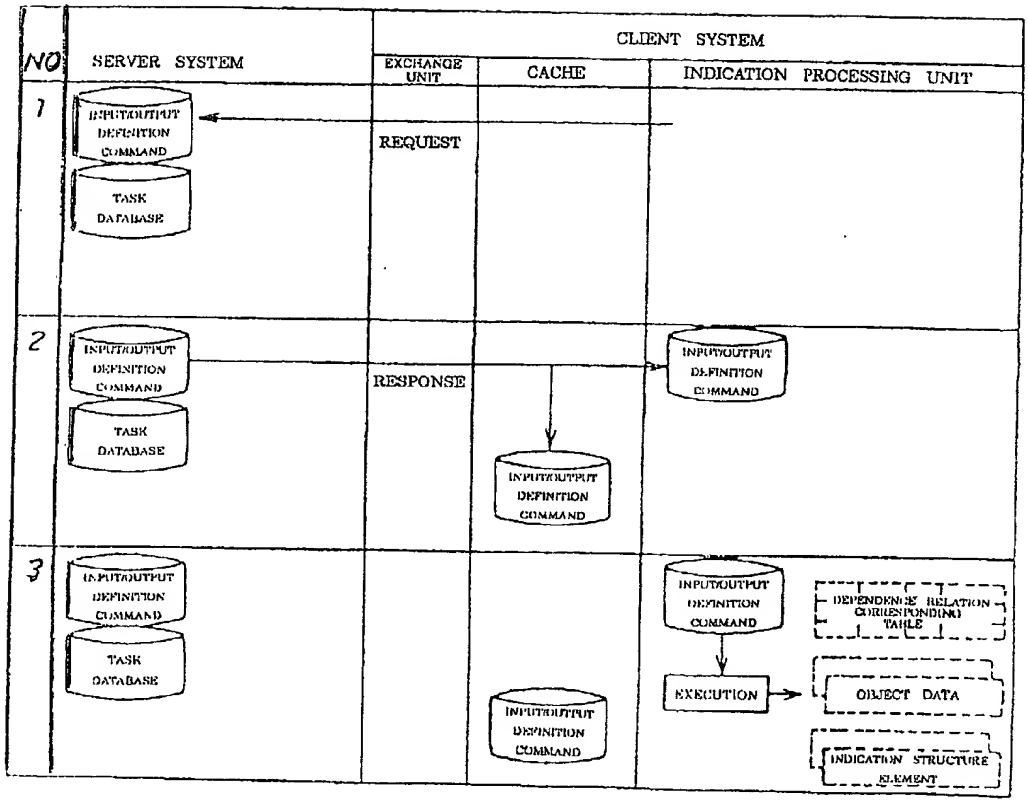

NO
SERVER SYSTEM
CLIENT SYSTEM
EXCHANGE UNIT
CACHE
INDICATION PROCESSING UNIT
1
INPUT/OUTPUT DEFINITION COMMAND
TASK DATABASE
REQUEST
2
INPUT/OUTPUT DEFINITION COMMAND
TASK DATABASE
RESPONSE
INPUT/OUTPUT DEFINITION COMMAND
INPUT/OUTPUT DEFINITION COMMAND
3
INPUT/OUTPUT DEFINITION COMMAND
TASK DATABASE
INPUT/OUTPUT DEFINITION COMMAND
INPUT/OUTPUT DEFINITION COMMAND
DEPENDENCE RELATION CORRESPONDING TABLE
EXECUTION
OBJECT DATA
INDICATION STRUCTURE ELEMENT

FIG.5

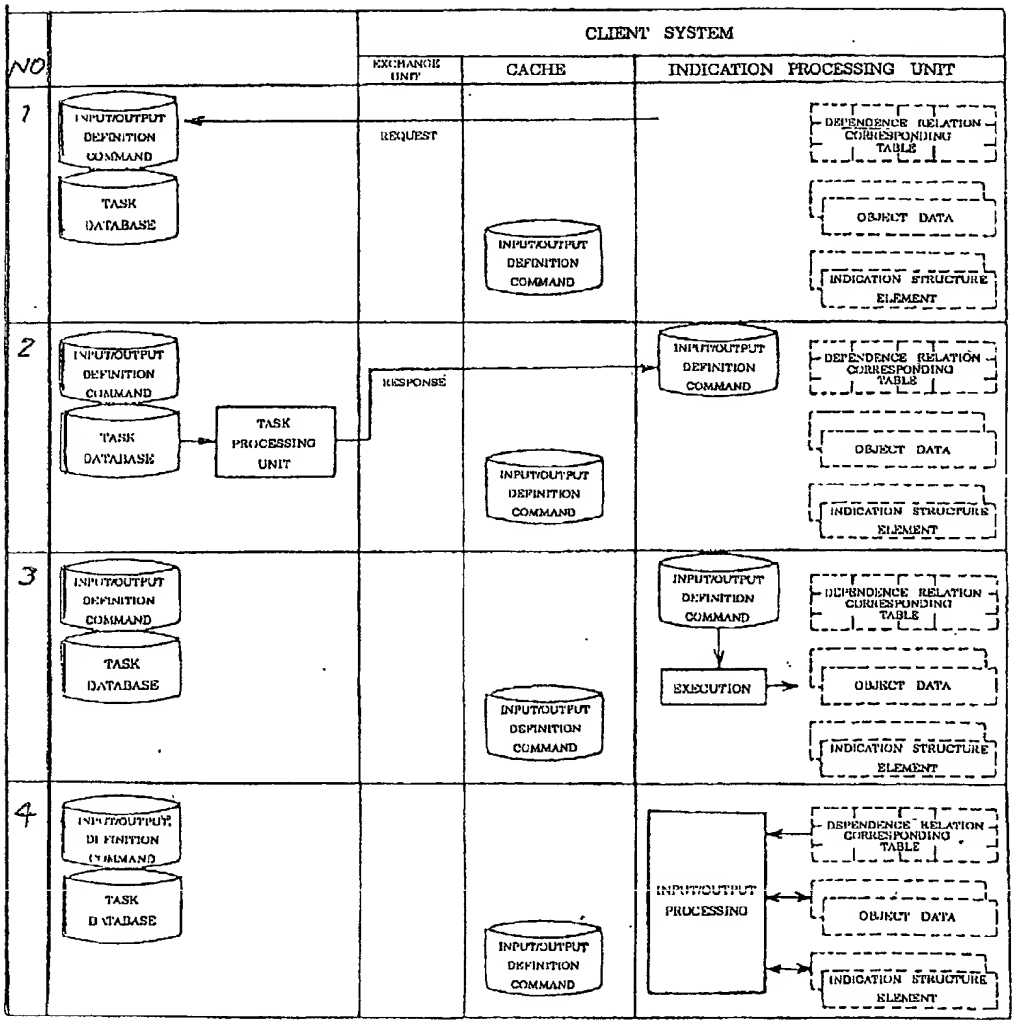
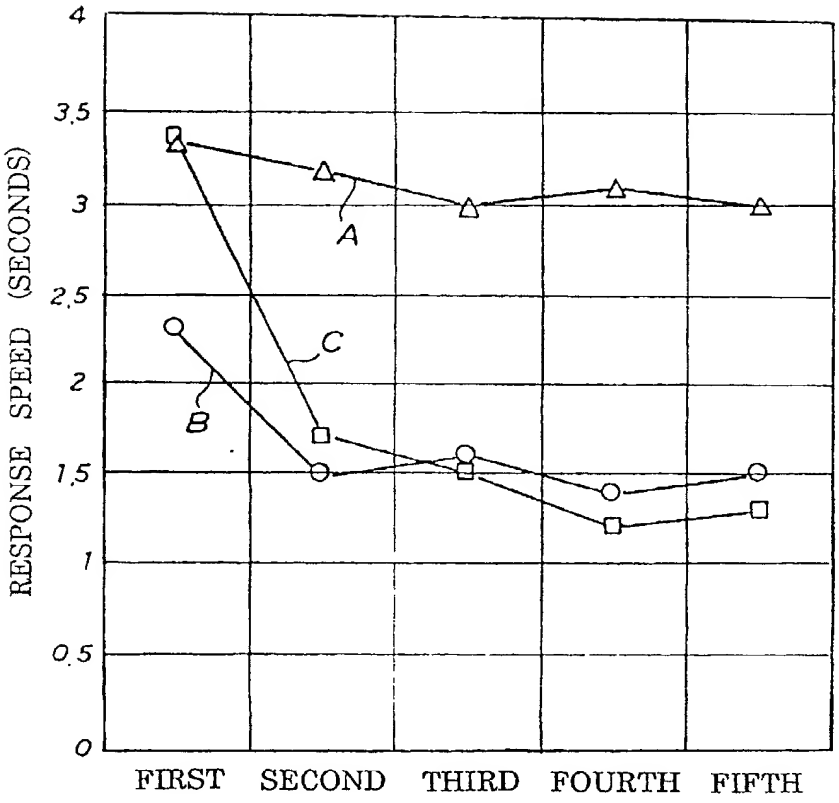

NO
CLIENT SYSTEM
EXCHANGE UNIT
CACHE
INDICATION PROCESSING UNIT
1
INPUT/OUTPUT DEFINITION COMMAND
TASK DATABASE
REQUEST
INPUT/OUTPUT DEFINITION COMMAND
DEPENDENCE RELATION CORRESPONDING TABLE
OBJECT DATA
INDICATION STRUCTURE ELEMENT
2
INPUT/OUTPUT DEFINITION COMMAND
TASK DATABASE
TASK PROCESSING UNIT
RESPONSE
INPUT/OUTPUT DEFINITION COMMAND
INPUT/OUTPUT DEFINITION COMMAND
DEPENDENCE RELATION CORRESPONDING TABLE
OBJECT DATA
INDICATION STRUCTURE ELEMENT
3
INPUT/OUTPUT DEFINITION COMMAND
TASK DATABASE
INPUT/OUTPUT DEFINITION COMMAND
INPUT/OUTPUT DEFINITION COMMAND
EXECUTION
DEPENDENCE RELATION CORRESPONDING TABLE
OBJECT DATA
INDICATION STRUCTURE ELEMENT
4
INPUT/OUTPUT DEFINITION COMMAND
TASK DATABASE
INPUT/OUTPUT DEFINITION COMMAND
INPUT/OUTPUT PROCESSING
DEPENDENCE RELATION CORRESPONDING TABLE
OBJECT DATA
INDICATION STRUCTURE ELEMENT

FIG.6


RESPONSE SPEED (SECONDS)
4
3.5
3
2.5
2
1.5
1
0.5
0
A
B
C
FIRST
SECOND
THIRD
FOURTH
FIFTH